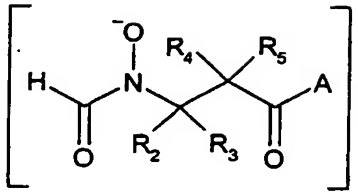
CLAIMS:

1. A crystalline salt of formula (I):



aM (I)

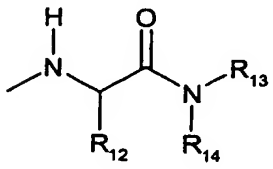
wherein

M is a mono- or di-valent metal;

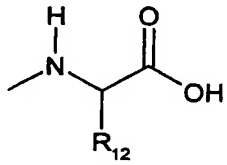
a is ½ or 1;

each of R_2, R_3, R_4 and R_5, independently, is hydrogen or an aliphatic group, or (R_2 or R_3) and (R_4 or R_5), collectively, form a C_4-C_7cycloalkyl;

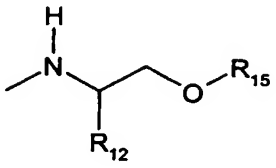
A is of the formula (Ia), (Ib), (Ic), (Id) or (Ie)



(Ia)

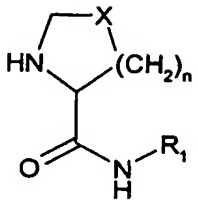


(Ib)



(Ic)

(Id)



(Ie)

wherein

R_{12} is the side-chain of a natural or a non-natural alpha amino acid;

R_{13} and R_{14}, independently, represent hydrogen, or optionally substituted C_1-C_8alkyl, cycloalkyl, aryl, aryl(C_1-C_6alkyl), heterocyclic or heterocyclic(C_1-C_6alkyl);

R_{15} is hydrogen, C_1-C_6alkyl or an acyl group;

X is -CH_2-, -S-, ,-CH(OH)-, -CH(OR)-, -CH(SH)-, -CH(SR)-, -CF_2-, -C=N(OR)- or -CH(F)-, wherein R is alkyl;

R_1 is aryl or heteroaryl; and

n is 0-3, provided that when n is 0, X is -CH_2-.

2. The crystalline salt of Claim 1, wherein A is formula (Ie).

3. The crystalline salt of Claim 3,

wherein

a is ½;and

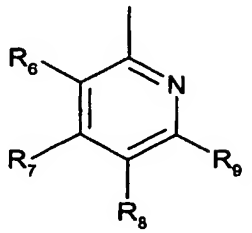
M is Ca, Zn or Mg.

4. The crystalline salt of Claim 2 or 3,

wherein

A is of formula (Ie); and

R_1 is a heteroaryl of formula (II.1)



(II.1)

wherein

R_6, R_7 and R_9 are hydrogen; and
R_8 is methyl or trifluoromethyl; or

R_6, R_7 and R_8 are hydrogen; and
R_9 is fluoro; or

R_6, R_8 and R_9 are hydrogen; and
R_7 is ethyl or methoxy; or

R_7, R_8 and R_9 are hydrogen; and
R_6 is hydroxy; or

R_7 and R_8 are hydrogen;
R_6 is methoxy; and
R_9 is methyl.

5. The crystalline salt of Claim 4,

wherein

R_6, R_8 and R_9 are hydrogen; and

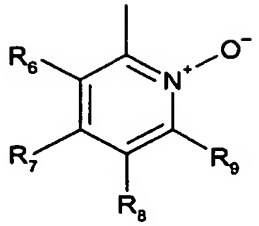
R_7 is ethyl.

6. The crystalline salt of Claim 2 or 3,

wherein

A is of formula (Ie); and

R_1 is of the formula (III.1)



(III.1)

wherein

R_6, R_7 and R_9 are hydrogen; and

R_8 is fluoro or trifluoromethyl; or

R_6, R_8 and R_9 are hydrogen; and

R_7 is ethyl.

7. The crystalline salt of Claim 6,

wherein

R_6, R_7 and R_9 are hydrogen; and

R_8 is fluoro.

8. The crystalline salt of Claim 7,

wherein

a is ½; and

M is Ca, Zn or Mg.

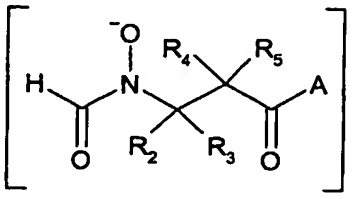
9. The crystalline salt of Claim 1, containing at least 2% water.

10. The crystalline salt of Claim 1, containing about 8% water to about 9% water.

11. The crystalline salt of Claim 1, wherein the X-ray powder diffraction pattern comprises crystalline peaks with 2-theta angles (Cu-K_α radiation) at least five of the following positions:
6.8 ± 0.1, 13.7 ± 0.1, 12.2 ± 0.1, 14.5 ± 0.1, 15.2 ± 0.1, 18.1 ± 0.1, 20.6 ± 0.1, 22.0 ± 0.1, 22.4 ± 0.1, 24.5 ± 0.1 and 30.9 ± 0.1.

12. A hydrated crystalline magnesium salt of 1-{2-*R*-[(formyl-hydroxy-amino)-methyl]-hexanoyl}-pyrrolidine-2-*S*-carboxylic acid (5-fluoro-1-oxy-pyridin-2-yl)-amide, in particular a corresponding tetrahydrate salt.

13. A process for preparing a crystalline salt of the formula (I)



(I)

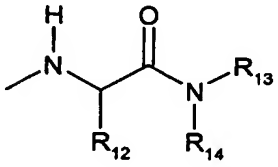
wherein

M is a mono- or di-valent metal;

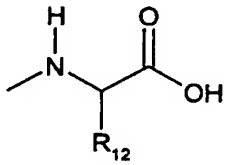
a is ½ or 1;

each of R_2, R_3, R_4 and R_5, independently, is hydrogen or an aliphatic group, or (R_2 or R_3) and (R_4 or R_5), collectively, form a C_4-C_7cycloalkyl;

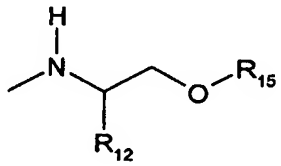
A is of the formula (Ia), (Ib), (Ic), (Id) or (Ie)



(Ia)



(Ib)



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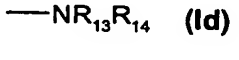
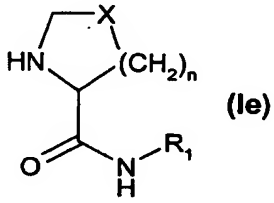


(Id)



(Ie)

wherein

R_{12} is the side-chain of a natural or a non-natural alpha amino acid;

R_{13} and R_{14}, independently, represent hydrogen, or optionally substituted C_1-C_8alkyl, cycloalkyl, aryl, aryl(C_1-C_6alkyl), heterocyclic or heterocyclic(C_1-C_6alkyl);

R_{15} is hydrogen, C_1-C_6alkyl or an acyl group;

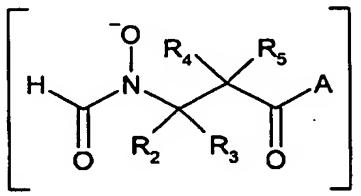
X is $-CH_2-$, -S-, -CH(OH)-, -CH(OR)-, -CH(SH)-, -CH(SR)-, -CF2-, -C=N(OR)- or -CH(F)-, wherein R is alkyl;

R_1 is aryl or heteroaryl; and

n is 0-3, provided that when n is 0, X is $-CH_2-$;

comprising dissolving the amorphous, non-salt form of the compound of formula (I) in a suitable solvent, contacting the dissolved compound with a base and with a metal salt, under conditions suitable to form the desired crystalline salt of formula (I).

14. A method for treating and/or preventing an infectious disorder in a subject, comprising administering to the subject an effective amount of a crystalline salt of formula (I):



(I)

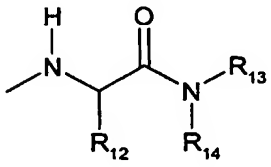
wherein

M is a mono- or di-valent metal;

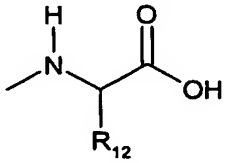
a is ½ or 1;

each of R_2, R_3, R_4 and R_5, independently, is hydrogen or an aliphatic group, or (R_2 or R_3) and (R_4 or R_5), collectively, form a C_4-C_7cycloalkyl;

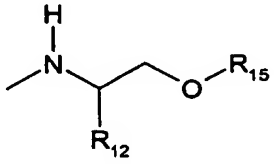
A is of the formula (Ia), (Ib), (Ic), (Id) or (Ie)



(Ia)



(Ib)



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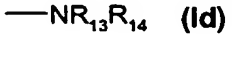
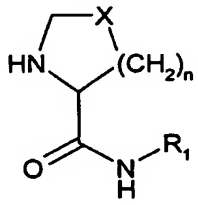


(Id)



(Ie)

wherein

R_{12} is the side-chain of a natural or a non-natural alpha amino acid;

R_{13} and R_{14}, independently, represent hydrogen, or optionally substituted C_1-C_8alkyl, cycloalkyl, aryl, aryl(C_1-C_6alkyl), heterocyclic or heterocyclic(C_1-C_6alkyl);

R_{15} is hydrogen, C_1-C_6alkyl or an acyl group;

X is $-CH_2-$, -S-, ,-CH(OH)-, -CH(OR)-, -CH(SH)-, -CH(SR)-, $-CF_2-$, -C=N(OR)- or -CH(F)-, wherein R is alkyl;

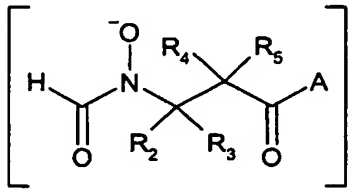
R_1 is aryl or heteroaryl; and

n is 0-3, provided that when n is 0, X is $-CH_2-$;

or a prodrug thereof.

15. The method of Claim 14, comprising co-administration of a therapeutically effective amount of the crystalline salt of formula (I), or a prodrug thereof, and a second therapeutic agent.

16. A pharmaceutical composition comprising a crystalline salt of formula (I),



(I)

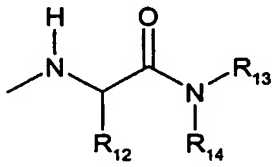
wherein

M is a mono- or di-valent metal;

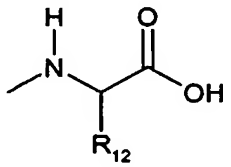
a is ½ or 1;

each of R_2, R_3, R_4 and R_5, independently, is hydrogen or an aliphatic group, or (R_2 or R_3) and (R_4 or R_5), collectively, form a C_4-C_7cycloalkyl;

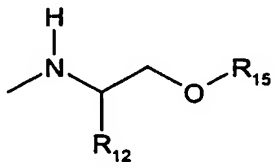
A is of the formula (Ia), (Ib), (Ic), (Id) or (Ie)



(Ia)



(Ib)



(Ic)

(Id)

(Ie)

wherein

R_{12} is the side chain of a natural or a non-natural alpha amino acid;

R_{13} and R_{14}, independently, represent hydrogen, or optionally substituted C_1-C_8alkyl, cycloalkyl, aryl, aryl(C_1-C_6alkyl), heterocyclic or heterocyclic(C_1-C_6 alkyl);

R_{15} is hydrogen, C_1-C_6alkyl or an acyl group;

X is $-CH_2-$, -S-, ,-CH(OH)-, -CH(OR)-, -CH(SH)-, -CH(SR)-, $-CF_2-$, -C=N(OR)- or -CH(F)-, wherein R is alkyl;

R_1 is aryl or heteroaryl; and

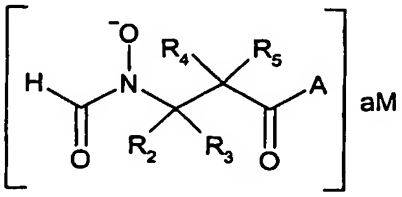
n is 0-3, provided that when n is 0, X is $-CH_2-$;

or a prodrug thereof,

in association with a pharmaceutically acceptable diluent or carrier therefor.

17. A composition according to claim 16 further comprising a second therapeutic agent.

18. Use of a crystalline salt of formula (I):



(I)

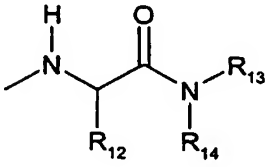
wherein

M is a mono- or di-valent metal;

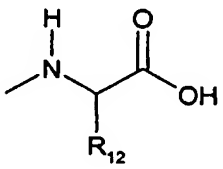
a is ½ or 1;

each of R_2, R_3, R_4 and R_5, independently, is hydrogen or an aliphatic group, or (R_2 or R_3) and (R_4 or R_5), collectively, form a C_4-C_7cycloalkyl;

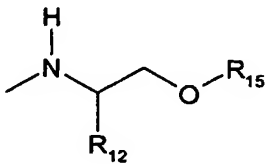
A is of the formula (Ia), (Ib), (Ic), (Id) or (Ie)



(Ia)



(Ib)



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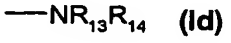

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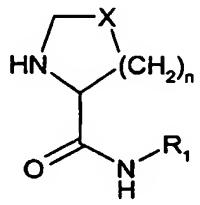

(Ie)

wherein

R_{12} is the side-chain of a natural or a non-natural alpha amino acid;

R_{13} and R_{14}, independently, represent hydrogen, or optionally substituted C_1-C_8alkyl, cycloalkyl, aryl, aryl(C_1-C_6alkyl), heterocyclic or heterocyclic(C_1-C_6alkyl);

R_{15} is hydrogen, C_1-C_6alkyl or an acyl group;

X is $-CH_2-$, -S-, ,-CH(OH)-, -CH(OR)-, -CH(SH)-, -CH(SR)-, $-CF_2-$, -C=N(OR)- or -CH(F)-, wherein R is alkyl;

R_1 is aryl or heteroaryl; and

n is 0-3, provided that when n is 0, X is $-CH_2-$;

or a prodrug thereof, optionally together with a second therapeutical agent, in the manufacture of a medicament method for treating and/or preventing an infectious disorder.